

MILITARY SPECIFICATION

BOOTS, SAFETY (NONSPARKING)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the requirements for materials and manufacture of non-sparking, water-resistant leather work footwear with oil and jet fuel resistant soles and heels and steel toes.

1.2 Classification. The boots shall be of one type in the following whole and half sizes, and widths as specified (see 6.2):

<u>Sizes</u>	<u>Widths</u>
5 through 15	XN - Extra Narrow
4 through 15	N - Narrow
4 through 15	R - Regular
4 through 15	W - Wide
4 through 15	XW - Extra Wide

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

---

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Officer in Charge, Navy Clothing and Textile Research Facility, 21 Starthmore Road, Natick, MA 01760 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

---

FSC 8430

SPECIFICATIONS

FEDERAL

- C-F-206 - Felt, Sheet: Cloth, Felt, Wool, Pressed
- V-L-61 - Laces, Footwear, Nylon
- V-T-285 - Thread, Polyester
- V-T-295 - Thread, Nylon
- KK-I-570 - Insole, Footwear, Leather, Cattlehide
- TT-C-490 - Cleaning Methods and Pre-treatment of Ferrous Surfaces for Organic Coatings
- TT-S-735 - Standard Test Fluids Hydrocarbon
- CCC-C-443 - Cloth, Duck, Cotton (Single and Plied, Filling Yarns, Flat)
- DDD-T-86 - Tape, Textile, Cotton, General Purpose (Unbleached, Bleached, or Dyed)
- PPP-B-636 - Boxes, Shipping, Fiberboard

MILITARY

- MIL-S-4383 - Sealing Compound, Topcoat, Fuel Tank, Buna-N Type
- MIL-L-10867 - Leather, Gusset, Chrome-tanned, Fat Liqueured
- MIL-C-13924 - Coating, Oxide, Black, For Ferrous Metals
- MIL-C-41814 - Counters, Footwear
- MIL-B-41818 - Boots, Combat, Men's Leather, Black (MIL-5)
- MIL-C-43956 - Cloth, Twill, Cotton, 10.0 ounces
- MIL-L-43585 - Lasts, Footwear, Shoe, Safety-Toe, Men's US MIL-7
- MIL-S-22777 - Soles and Heels, Rubber, Traction Tread, Shoe

STANDARDS

FEDERAL

- FED-STD-151 - Metals; Test Methods
- FED-STD-191 - Textile Test Methods
- FED-STD-311 - Leather, Methods of Sampling and Testing
- FED-STD-601 - Rubber; Sampling and Testing
- FED-STD-751 - Stitches, Seams, and Stitchings

MILITARY

- MIL-STD-105    - Sampling Procedures and Tables for Inspection by Attributes
- MIL-STD-129   - Marking for Shipment and Storage

LAWS AND REGULATIONS

US POSTAL SERVICE MANUAL

(Copies of the manual may be obtained from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.)

2.2 Other publications    The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply:

AMERICAN SOCIETY FOR TESTING MATERIALS STANDARDS

- B-36                      - Brass, Plate, Sheet, Strip and Rolled Bar; Specification for
- B-134                   - Brass, Wire; Specification for
- D-5                      - Test for Penetration of Bituminous Materials
- D-412                   - Tension Testing of Vulcanized Rubber
- D-1084                  - Test for Consistency of Adhesives
- D-2240                  - Test for Indentation of Rubber by Means of a Durometer
- D-746                   - Test for Brittleness Temperature of Plastics and Elastomers by Impact
- D-816                   - Testing Rubber Cements
- D-2098                  - Dynamic Water Resistance of Shoe Upper Leather by the Dow Corning Leather Tester
- D-2099                  - Dynamic Water Resistance of Shoe Upper Leather by the Maeser Water Penetration Tester
- E-28                    - Test for Softening Point by Ring and Ball Apparatus

(Application for copies should be addressed to the American Society for Testing Materials, 1916 Race Street, Philadelphia, PA 19103.)

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI Z41.1-1972 - American National Standard for Men's Safety-toe  
Footwear

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018).

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Application for copies should be addressed to American Trucking Association, Inc., Attn: Traffic Department, 1616 P Street, N.W., Washington, DC 20036.)

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

3. REQUIREMENTS

3.1 Guide sample. Samples, when furnished, are solely for guidance and information to the contractor (see 6.3). Variation from this specification may appear in the sample, in which case this specification shall govern.

3.2 First article. When specified (see 6.2), the contractor shall furnish sample unit(s) for first article inspection and approval (see 4.2 and 6.2).

3.3 Materials

3.3.1 Upper leather, vamps, quarters, toe tip and counterpocket backstay. The uppers shall be cut from the best quality, chrome tanned sides. The tannery lots shall not exceed 25,000 square feet. The sides shall be full grained, 4 to 5 1/2 ounces in thickness and the area of a side shall not exceed 22 square feet. The break in vamps and quarters shall not be more than a break scale of 5 (see 4.3.5.1). Surface defects, if barely perceptible, are permitted in cut parts. Embossing or printing of leather shall not be permitted. A certificate of compliance shall be submitted, stating that the leather does not contain a printed or embossed finish. Cut parts with perceptible scratches, brands, open scars or light flesh cuts that show through the grain surfaces of the leather shall not be used. Flanky, loose, boney, pipey, cracked or any rough or coarse grain leather shall not appear in the vamps or quarters; however, these defects may appear in the tongue area or counter pocket. Cut parts shall be examined as specified in 4.3.2.2.

3.3.1.1 Water resistance. The sides of the leather shall be treated with a suitable water resistance compound to bar water penetration and water absorption.

3.3.1.1.1 Water penetration. The leather shall withstand 4,000 Dow Corning flexes or 15,000 Maeser flexes; however, 30 percent of the samples shall withstand not less than 1000 Dow Corning flexes or 3,000 Maeser flexes when tested as specified in 4.3.1.

3.3.1.1.2 Water absorption. The leather shall absorb not more than 30 percent of its weight after being immersed in water when tested as specified in 4.3.1.

3.3.1.2 Color and finish. The leather shall be black and shall be drum dyed. The leather shall be full grain and shall be finished grain side out with no buffing or snuffing to remove surface blemishes. A light application of black finish containing only a sufficient amount of pigment to assist in obtaining a uniform color may be applied and the surface brought to a smooth finish. The flesh side of the leather shall be cleaned of coarse fibers.

3.3.2 Leather tongues, eyelet stays and top facings. Tongues, eyelet stays and top facings shall be leather conforming to treatment B of MIL-L-10867. Thickness of the leather shall be not less than 2 1/4 ounces or more than 3 1/2 ounces. Requirements for stitch tear strength, shrinkage, temperature, stiffness, paranitrophenol and chemical requirements shall not apply. Not less than 80% of the treated leather samples tested shall withstand a minimum of 50 taps when tested as specified in 4.3.1.

3.3.3 Combination vamp lining. The vamp lining shall have a leather toe tip of soft chrome-tanned, full grain or corrected grain, cattlehide glove leather. The color of the leather shall be as produced by the tanning agents. A light application of dye may be used to level the color of the grain surface. The leather shall be minimum of 2 ounces and a maximum of 3 1/2 ounces in thickness. The remainder of the vamp lining shall be fabric conforming to class 2 of MIL-C-43956.

3.3.4 Heel pads. The heel pads may be cut from leather specified in 3.3.3.1 sheepskin or natural kid or calf, with a minimum of 2 ounces and a maximum of 3 1/2 ounces in thickness. Use of leather specified in 3.3.1 is acceptable provided the top finish has been removed by buffing or splitting and the thickness is a minimum of 2 ounces and a maximum of 3 1/2 ounces.

3.3.5 Insoles. The insoles shall conform to type I, class 1, tannage (a) or (b), of KK-I-570, except that the thickness shall be 5 1/2 to 7 1/2 irons and the requirements for paranitrophenol shall not apply.

3.3.6 Leather, general. Leather components are not required to contain a fungicide treatment. However, leather components may contain paranitrophenol fungicide provided the fungicide content of the leather does not exceed 0.70 percent based on the dry weight of the leather, when tested as specified in 4.3.1.

3.3.7 Outsoles. The outsoles shall conform to type I, Grade C of MIL-S-22777. As an alternate, the tread area may be of a straight bar design or a surface of a commercial design approved by the preparing activity.

3.3.8 Heels. Heels shall conform to type II, Grade A or C, class 1 of MIL-S-22777. As an alternate, the tread area may be of a straight bar design or a surface of a commercial design approved by the preparing activity.

3.3.9 Welting, synthetic/ The synthetic welting shall be black and conform to the dimensions of Figure 2. The finished welting shall be smooth, uniform in texture, be free of all defects that affect serviceability and appearance and conform to the requirements specified in Table I when tested as specified in 4.3.1. As an alternate, a storm welt with a 0.11 to 0.13 inch diameter bead may be used.

Table I - Synthetic welting requirements

Property	Requirements
Initial	
Hardness	85-96
Specific gravity	1.32 maximum
Brittle point	-15½F (-26½C) or less
Brittle point (after aging)	+20½F (+6.7½C) maximum change from standard brittle point
Tensile strength, pounds per sq. in	2300 minimum
Elongation, percent	225 minimum
Water absorption, percent gain	3.00 maximum
Peel resistance (after immersion)	
Hardness	55 minimum
Tensile strength, pounds per sq. in	1800 minimum
Elongation, percent	225 minimum
Volume swell, percent	35 maximum

3.3.10 Counters. Counters shall conform to the requirements of MIL-G-41814.

3.3.10.1 Counter sizes. Counters shall be made in a sufficient number of sizes to cover boot sizes 4 through 15 and necessary widths. Counters shall conform to the shape of the MIL-7 last (MIL-L-43585).

3.3.11 Adhesives

3.3.11.1 Seam seal adhesive. The adhesives used for sealing the inseam areas shall be as specified in 3.3.11.1.1 or 3.3.11.1.2.

3.3.11.1.1 Vinyl type. The adhesive shall be composed of a polyvinyl butyral base and a non-bleeding phthalate plasticizer and other ingredients necessary to produce a clear colorless adhesive for the purpose intended. The adhesive shall have a minimum weight of 7.40 pounds per gallon, with a minimum total solids content of 19 percent and a viscosity of 40 to 50 seconds when tested as specified in 4.3.1.

3.3.11.1.2 Buna-N-type. The adhesive shall conform to the requirements of MIL-S-4383 except that the color shall be natural or colorless.

3.3.12 Fabrics

3.3.12.1 Insole reinforcement. The insole reinforcement shall be a cotton duck material conforming to Type I or III of CCC-C-443. As an alternate, an insole reinforcement fabric conforming to the requirements of 3.3.25 may be used.

3.3.12.2 Backseam tape. The backseam tape, when used, shall be 1/2 inch or 7/16 inch wide conforming to type I, class 1 of DDD-T-86, except that the requirement for non-fibrous material shall not apply.

3.3.13 Thread

3.3.13.1 Thread, upper fitting. Upper fitting stitching operations shall be performed using nylon thread conforming to type I or II, Class 1, or Type III of V-T-295. Colorfastness requirements shall not apply. Thread size shall be E for the needle and bobbin on stitch type 301 and E for the needle and B or E for the looper with stitch type 401. The color shall be black.

3.3.13.2 Thread, Goodyear stitching. Thread used for Goodyear (sole) stitching shall be polyester conforming to Type I, Class 1, subclass C of V-T-285. The running thread shall be black, size 10, 3 ply. The shuttle thread shall be natural, size 10, 3 or 6 ply. Colorfastness requirements shall not apply.

3.3.13.3 Thread, inseaming, polyester. The polyester inseaming thread shall conform to type I, class 1, subclass C of V-T-285. The thread shall be size 10, 3 or 6 ply and natural in color.

3.3.14 Box toes

3.3.14.1 Understructure box toe. The understructure box toe shall be made of two layers of single napped cotton fabric, having a combined finished thickness of 0.034 to 0.038 inch and shall have a minimum finished weight of 12 ounces per square yard when cemented together with a polyvinyl acetate resin. The amount of the adhesive used shall not be less than 50 percent of the fabric weight. The napped surfaces shall be on the outer sides. The polyvinyl acetate resin adhesive shall become soft and pliable when the box toe is inserted in the box toe heating equipment. As an alternate, a unicellular (closed cell) material, not less than 3/32 inch in thickness, may be used in lieu of the impregnated understructure box toe. The foam material used shall extend approximately 1/2 inch rearward of the steel box toe and completely line the steel box toe and shall be large enough to be caught in the inseaming operation.

3.3.14.2 Toe cushion. The material used to cushion the steel box toe and mask the breastline, shall be of wool felt conforming to Type III, classification 9A-2 of C-F-206. As an alternate, the following materials may be used in lieu of wool felt, and shall be cut large enough to extend approximately 1/2 inch rearward of the steel box toe breastline:

(a) Foamed polyvinyl material, 3/32 (+ 1/32) inch in thickness weighing 4 to 6 pounds per cubic foot.

(b) Latex foam rubber 1/8 (+ 1/64) inch thick.

3.3.14.3 Steel Box toe. The steel box toe shall be fabricated from cold-rolled carbon steel, and shall conform to the toe of the last. The steel box toes shall meet the requirements of Table II after heat treatment, when tested as specified in 4.3.1. The steel box toes shall be thoroughly cleaned and completely coated with a zinc compound. As an alternate, the steel box toes may be coated with any suitable resin coating that will assure protection against corrosion and will not damage the component parts of the boot.

Table II - Physical requirements, steel box toe

Harness	Carbon content	Thickness (inches)
43-50	0.50 to 0.82	0.0625 $\pm$ 0.0025



3.3.14.3.1 Impact resistance. The steel box toes of the finished boots shall have a minimum inside clearance of 1/2 inch when tested as specified in 4.4.3.1.

3.3.15 Bottom filler. The bottom filler may be either thermoplastic or cold process type. The thermoplastic type shall consist of a mixture of ground cork and a suitable thermoplastic binder in the proportion of a minimum of 2 3/4 parts by volume of cork to each part of binder. The cork granules shall be of the best quality and free of bark. The ground cork and binder shall be thoroughly and evenly mixed. The binder shall be water insoluble and flexible. It shall have a softening point of at least 125½F (51.8½C) and a maximum penetration of 85 millimeters at a 200 gram load for 50 seconds at 77½F (25½C), when tested as specified in 4.3.1. The cold process type shall be spreadable without the use of heat. It shall consist of a mixture of ground cork and a suitable binder in the proportion of two parts cork to one part binder by volume. The cork granules shall be the best quality and free of bark. When the spread filler is dry and set, it shall consist of four parts to one part binder. It shall not soften at less than 150½F (65.6½C) and shall be water resistant and flexible. As an alternate to the cold process bottom filler specified above, when applied by semi-automatic equipment or method, the cold process bottom filler shall consist of a mixture of ground cork and a suitable binder in the proportion by weight of one part cork to five parts binder. Upon loss of solvent, it shall consist by weight of one part cork to 3 3/4 parts binder. The binder shall be water-insoluble and have a softening point of at least 125½F (51.8½C) when tested as specified in 4.3.1.

3.3.16 Shank combination. The shank combination shall be made of a shank board piece with a single reverse rib steel shank securely attached by four prongs or two rivets. The steel shanks shall be positioned 1/2 (+ 1/16) inch from the front edge of the shankboard piece. There shall be 7 sizes of shank combination for the run of boot sizes specified in 3.3.16.3.

3.3.16.1 Shank board. The shank board shall be water resistant (shank board that has been hot waxed is considered as being water resistant). The finished thickness of the shank board shall be 1/8 (+ 1/32) inch. The shank board shall be cut in accordance with Government furnished patterns specified in 3.5. The shank board pieces shall be molded to follow the bottom cavity of the boots, and both ends shall be skived with a graduated scarf 1 3/8 (+ 1/16) inches wide. The shank board pieces shall be marked consecutively with a steel stamp starting with figure "1" on the smallest size to and including "7" on the largest size.

3.3.16.2 Steel shank. The steel shank shall be constructed from 19 gage 0.0418 (+ 0.0030) inch cold rolled carbon steel with a hardness ranging from 47 to 54 Rockwell C scale when tested as specified in 4.3.1 and shaped to the manufacturer's standard number 4 bend, conforming to the arch of the MIL-7 last. The width of the steel shank shall be 5/8 (+ 1/64) inch. The steel shank shall be made with a single rib. The overall thickness of the steel shank with rib shall be 0.080 to 0.125 inch. The steel shank shall have a zinc electroplated coating, dull or bright finish, or a zinc compound completely and uniformly applied to the base metal following a cleansing by any method of TT-C-490. Steel shanks with black oxide coating conforming to class 1 of MIL-C-13924 may be used in lieu of steel shanks with zinc coating. The rib shall taper off at a point within 1/2 (+ 1/8) inch from each end. The steel shank for size 4 shall be 4 1/2 (+ 1/16) inch in length and the lengths for the other sizes shall grade up or down 1/4 (+ 1/16) inch.

3.3.16.3 Shank fitting sizes. The shank fitting shall conform to the schedule specified in Table III.

Table III - Shank Fitting Schedule

Shank sizes	1	2	3	4	5
Boot widths and sizes					
XN-N	4 4 1/2 5 5 1/2 6 6 1/2	7 7 1/2 8 8 1/2	9 9 1/2 10 10 1/2	11 11 1/2 12 12 1/2	13 13 1/2 14
R-W	4 4 1/2 5	5 1/2 6 6 1/2 7	7 1/2 8 8 1/2 9	9 1/2 10 10 1/2 11	11 1/2 12 12 1/2 13
XW	4 4 1/2	5 5 1/2 6 6 1/2	7 7 1/2 8 8 1/2	9 9 1/2 10 10 1/2	11 11 1/2 12 12 1/2
	6	7			
XN - N	14 1/2 15				
R - W	13 1/2 14 14 1/2	15			
XW	13 13 1/2 14	14 1/2 15			

3.3.17 Laces. The laces shall be black and shall conform to Type II, Class 3 of V-L-61. The minimum length of laces shall be 60 inches.

3.3.18 Metal fittings.

3.3.18.1 Eyelets. The eyelets shall be made of aluminum, 0.0160 (+ 0.0015) inch thick, with roll setting barrel and shall conform to the following finished requirements when tested as specified in 4.3.1.

Outside diameter of flange	- 0.480 to 0.496 inch
Outside diameter of barrel	- 0.295 to 0.299 inch.
Diameter of hole before setting	- 0.235 to 0.240 inch.
Overall length	- 0.224 to 0.236 inch.

3.3.18.1.1 Finish of eyelet. After fabrication, the eyelets shall be anodized and top roller coated or tumble coated with not less than two coats of black enamel.

3.3.18.2 Nails, heel attaching. Heel nails shall be brass, cut or wire type and of sufficient length to produce a secure smooth clinch on the insole. The cut-type nails shall be of material conforming to alloy No. 6 or No. 8 of ASTM Standard B-36 and shall be commercial number 450 or 1336 with a 20 gauge point when gauged as specified in 4.3.1. The wire nails shall be commercial type 13 gauge with a flat clinching point and shall be of material conforming to alloy No. 7 of ASTM Standard B-134.

3.3.18.3 Tacks and staples. Assembly tacks and staples, heel seat lasting tacks, welt butt tacks and tacks or staples used for attaching the shank shall be brass or steel and shall be of sufficient length to thoroughly attach the parts through which they are driven and leave the insole smooth on the inside. All brass tacks shall be of material conforming to alloy No. 6 or No. 8 of ASTM Standard B-36, when tested as specified in 4.3.1.

3.3.18.4 Nails, heel seat fastening. Nails used for heel seat fastening shall be No. 39 head, brass nail or steel nail of sufficient length to firmly secure all parts through which they are driven and leave a smooth, secure clinch on the insole. Testing shall be as specified in 4.3.1.

3.3.19 Wax. The wax used during the inseam sewing and Goodyear stitching operations shall be white or golden in color and shall be a permanently plasticized resin that will thoroughly penetrate the thread used for stitching through the sole, welt or inseam in a temperature range of normal machine use.

3.3.20 Cleaner solution. A suitable cleaning solution shall be used to remove grease and soil marks of manufacturing operations from the boot uppers. The solution shall have a maximum pH value of 8 and shall not decrease the water resistant characteristics of the upper leather. The contractor shall furnish a certificate of compliance stating that the pH value of the cleaner solution does not exceed the above requirement.

3.3.21 Repairers. Repairers shall be a liquid spray, crayon or paste type applied by hand. The color shall match the color of the upper leather and shall have sufficient coverage to correct minor surface imperfections of the leather.

3.3.22 Renovators. Renovators used in lieu of, or in addition to, repairers shall match the color of the upper leather. Application may be by sponge or spray method and the color uniform throughout.

3.3.23 Fillers. Where fillers are used, they shall be capable of providing a foundation for the application of the top finish and may be applied by sponge or spray method.

3.3.24 Top finish. A silicone or other water resistant top finish may be applied by a sponge or spray method.

3.3.25 Insole, stuck-on rib. The finished rib shall consist of a combination of coated fabric and fiberboard materials. The rib shall be 15/64 (+ 1/64) inch high with a minimum of 5/8 inch in width when measured from the inside vertical portion of the rib, and shall extend around the periphery of the insole from heel breastline to heel breastline. The fabric used for the stuck-on rib shall meet the requirements as listed below when tested as specified in 4.3.1. A suitable cotton-synthetic fabric equal to the requirements listed below may be used as an alternate. The fabric shall be coated on one side with a suitable adhesive and bonded to the flesh side of the insole. The fiberboard and fabric shall cover 5/32 (+ 1/32) inch of the peripheral edge, and provide for the required edge extension of the finished boot.

#### Fabric requirements

Weight, ounces per sq. yd. (min)	Yarns per inch (min)		Breaking Strength, lbs (min)
	Warp	Filling	Warp and Filling
8.0	52	30	105

3.3.25.1 Rib strength. The physical requirements for the stuck-on rib shall conform to the list below when tested as specified in 4.3.4.2:

Characteristic	Minimum <u>1/</u>	Average
Shear strength	70 (pounds)	75 (pounds)
Stitch strength	20 (pounds)	30 (pounds)

1/ No single determination shall fall below the minimum value specified and the average of all determinations shall not be less than the average specified.

3.4 Design. The design shall be a full lace closure with "V" notch in the eyelet row edge of the quarters, grain out upper leather, plain toe with stitched on toe cap, combination leather and cloth vamp lining and steel box toe. The boots shall have a full length rubber outsole and heel with beveled breast. (See figure 1)

3.5 Patterns and dies. The height of the finished boot, measured upward on outside from bottom at breast of heel to top of boot, shall be  $10\text{-}1/2 \pm 1/4$  inches on size 9 and shall graduate up or down between whole sizes approximately  $1/8$  inch as indicated by patterns. A standard set of paper patterns (MIL-B-41818) will be furnished by the Government as a basis from which the contractor's dies or patterns shall be made. The patterns and contractor's cutting dies and patterns shall consist of the component parts as specified in table IV. In addition patterns for the toe tip and vamp markers will be furnished by the Government. The Government patterns shall not be altered in any way and shall be followed except for lasting allowance, which shall be determined by the contractor. The lasting allowance around the heel seat may include two "V" notches no greater than  $7/16$  inch in depth at the center back area of the counterpocket. The contractor shall furnish wood insole rounding patterns conforming to paper patterns loaned by the procuring activity. The one-piece counterpocket-backstay may be used with an inverted "V" removed in the center of the back of the counterpocket. The height of the cut for this inverted "V" shall be a maximum of  $1\text{-}1/4$  inches from the bottom of the lasting allowance on a size 3 and grading upward to a maximum height of  $1\text{-}1/2$  inches on a size 15. The point of this inverted "V" shall be in the center back of the counterpocket. All outer lines of this counterpocket-backstay must conform to the Government furnished patterns except for this inverted "V". This "V" shall be removed in a curved line to conform, after closing, to the back part of the MIL-7 last.

Table IV. Contractor's dies and patterns

<u>Component parts</u>	
Vamp	Whole and half sizes, all widths
Quarter ("V" notch)	Whole and half sizes, all widths
Counterpocket-backstay (one piece)	Whole and half sizes, all widths
Toe tips	Half sizes, all widths
Tongue	Whole and half sizes, all widths
Top facing	Five sizes, one width
Eyelet stay	Three sizes, one width
Vamp lining (cloth and leather) <u>1/</u>	Whole sizes, all widths
Insole	Whole and half sizes, all widths
Shank board	7 sizes, widths not applicable

1/ Lining pattern shall be modified to accommodate proper size leather toe lining portion.

3.6 Lasts and markers. The boots shall be made on the MIL-7 last (MIL-L-43585). All necessary sizes of lasts will be loaned to the contractor by the Government. A marker set consisting of a one-piece counterpocket-backstay, vamp, and quarter, in whole and half sizes, all widths, will be loaned to the contractor by the Government.

### 3.7 Construction

3.7.1 Cutting uppers. The uppers shall be cut from grain cut leather specified in 3.3.1. Vamps shall be cut from the bend area of the side leather. No parts cut off stretch shall be accepted.

3.7.2 Skiving. Upper leather cut parts shall be skived as indicated below. Scarf areas shall be sufficient to reduce bulk and to provide a smooth, even fitting. All skiving shall be done on the flesh side. The areas shall be skived at the option of the contractor.

Skiving requirements

Part	Location
Quarters	Back edge, vamp margin
Vamp	Throat and wings
Vamplining (leather toe tip)	Breastline
Toe tip (upper)	Lasting edge

3.7.2.1 Staining of cut edges. All cut leather edges that are exposed in the end item shall be stained to match the color of the upper leather.

3.7.3 Crimping. When necessary, vamps and vamp linings shall be crimped not more than one pair at a time.

3.7.4 Marking, permanent identification. The inside of each boot shall be marked on the grain side with the correct size and width, the contractor's identification symbol, and the month and year (expressed numerically) of the date of contract. The marking shall be impressed into the grain side of the leather in such a manner as to be permanently visible without cutting through at any point, and shall be placed approximately in the center of the inside quarter and between the two rows of top facing stitching. Figures shall be Arabic and letters Gothic. The figures and letters shall be a minimum of 9/32 inch and a maximum of 3/8 inch in height. The contractor's symbol shall be in a block as shown by the following example:  
10 W /AE/ 2-77.

THESE NON-SPARKING BOOTS HAVE OIL AND JET FUEL RESISTANT SOLES AND HEELS  
AND PROTECTIVE STEEL TOES.

3.7.5 Upper leather fitting. Line marking patterns shall be used for all upper fitting. No die stab marking will be allowed. Quarters shall be closed at the back using stitch type 401 of FED-STD-751. As an alternate, the quarters may be closed at the back using stitch type 502 or 503. The back seam shall be closed with stitching closely positioned to the edge of quarters on the grain side, and shall be rubbed down. The backseams shall be reinforced on the grain side with backseam tape, using stitch type 301. All other upper stitching shall be done using stitch type 301. All upper stitching shall be 8 to 10 stitches per inch.



3.7.5.1 One-piece counterpocket-backstay fitting. The one-piece counterpocket-backstay shall be stitched to quarters with two rows of stitching spaced 1/16 to 1/8 inch between rows on the side edges of the one-piece counterpocket-backstay to the top of the boot or across the top edge of the one-piece counterpocket-backstay. The counterpocket-backstay shall be reinforced with two additional inside rows of stitching around the counterpocket and extending to the backstay in conformance with the curvature of the backstay area as indicated by the marker patterns. The inside rows of stitching shall be spaced 1/16 to 1/8 inch between rows. The use of single or double needle machine is permitted. If inverted "V" seam counter is used, the "V" seam shall be closed, sewing upward from the lasting edge. The closing shall be done with one row of stitching using stitch type 401 and 8 to 10 stitches per inch. The "V" seam shall extend approximately 1/16 inch on the flesh side and shall be rubbed down. The butt side of the "V" seam shall be on the flesh side of the leather.

3.7.5.2 Vamp lining assembly. Stitch leather toe tip to the cloth vamp lining at the breastline edge with one or two rows of stitching, stitch types 301, 8 to 10 stitches per inch, 1/16 to 1/8 inch from the edge of the leather. The leather toe tip shall be cut large enough to extend rearward of the steel toe breastline.

3.7.5.3 Toe tip fitting. The correct size leather toe tips shall be stitched to the toe areas of the vamp (flesh side out) with 4 rows of stitching, stitch type 301, 8 to 10 stitches per inch, with the first row of stitching approximately 1/16 inch from the edge of the leather.

3.7.5.4 Tongue fitting. The quarter eyelet stay shall underlap the tongue and shall be lockstitched with two rows of stitching close to the edge of the tongue. The tongue shall be stitched to the vamp grain side out, with two rows of stitching, with one row of stitching not more than 3/32 inch from the edge of the tongue and a second row placed not more than 3/32 inch from the edge of the vamp, both of these rows to include stitching through the vamp lining. The tongue and eyelet facings shall be stitched to the quarters with edge and eyelet rows trimmed flush to 1/8 inch undertrim. The inside top facing, inserted flesh out, shall be fitted overlapping or under the eyelet stay and shall be undertrimmed and stitched with one row of stitching at the top edge. The bottom edge of the facing shall also be stitched to the quarters with one row of stitching.

\* 3.7.5.5 Eyeletting. On each quarter there shall be nine eyelets for all sizes. Four eyelets shall be spaced evenly from blucher nose to the bottom portion of the "V" notch of the quarter and the remaining five eyelets shall be spaced evenly from top portion of the "V" notch quarter to top of the quarter. The edges of eyelets shall be 1/8 to 5/16 inch from the edge of the quarter. The eyelets shall be securely and smoothly clinched.



\* 3.7.5.6 Lacing for lasting. The machine lacing for lasting shall provide for a  $1 \pm 1/8$  inch opening after lasting. The quarter shall be laced in the three lower pairs of eyelets. As an alternate, the quarters may be laced in the first and third or the two lower pairs of eyelets.

\* 3.7.5.7 Vamping, barring. Vamping shall be done with two rows of stitching close on the edge of the quarter, plus two rows single or double machine stitched, spaced  $5/32$  to  $1/4$  inch between inside rows. The vamp lap shall extend beyond the second two space rows but not more than  $3/16$  inch. The bar row shall be uniformly spaced between and parallel to, the two rows of vamping. The vamp bar shall consist of one or two rows and shall be  $5/8 \pm 1/16$  inch in length on each blucher ear. As an alternate, the bar consisting of one row of stitching may be placed outside and above vamping, not more than  $1/16$  inch and parallel to the vamping row at each blucher ear and in the length specified above. The barring shall be done by single or double needle, or by the automatic method with tying or locking ends.

3.7.5.7.1 Coating and sealing - Outside upper stitching. Daub all outside needle threads with a minimum of 15 percent Sylmer solution (a silicone polymer).

3.7.6 Insoles. Insoles shall be sorted for varying fibers to obtain uniform channeling and cased for even weight. The insoles shall be fleshed and rounded to patterns. Die cut insoles will be acceptable provided they conform to insole patterns loaned by the Government. A  $\pm 1/64$  inch tolerance from Government loaned insole patterns will be allowed.

3.7.6.1 Insole marking and scoring. Each insole shall be stamped in the center of the shank on the grain side with the applicable size and width, using figures for the whole sizes and letters for the widths. The stamping must be plainly visible after the heel pads have been cemented in position. The letters and figures shall be at least  $1/4$  inch in height and the stamped impression shall be legible. The lip scoring cut shall not penetrate to a depth exceeding 50 percent of the insole thickness and the scoring for channeled insoles or marking for stuck-on rib insoles shall be located  $2-5/8 \pm 1/16$  inches from the heel end of a correctly rounded or die cut size 8R insole, and shall grade up and down from that size in accordance with the rate of grade obtained from a lip cutting and scoring machine.

3.7.6.2 Insole channeling. The insole, except stuck-on rib insole, shall be channeled and may be chamfered. The channel leaf and outside lip shall be not less than one-third the thickness of the insole, and the channel leaf shall be slightly thicker than the lip. The in-between substances shall be  $1/64$  to  $1/32$  inch greater than the combined thickness of the leaf and lip. The channel margin shall be a minimum of  $5/32$  inch and the maximum shall not exceed the required edge extension on the finished boot (see 3.7.19). The lips shall be cemented with a suitable adhesive and pressed together at lip setting to incline inward and be a minimum of  $1/8$  inch in height.

3.7.6.2.1 Assembly of stuck-on rib. When assembled, the stuck-on rib insoles shall meet the requirements of 3.3.2.5.1.

3.7.6.3 Insole backing. All insoles, except the stuck-on rib shall be reinforced with cotton duck specified in 3.3.12.1. The duck shall be coated on one side with any suitable adhesive and shall be bonded to the flesh side of the insole. The duck shall cover the entire area between the ribs and shall extend to the top of the upstanding rib. The duck shall be smoothly and firmly fitted to the base of the rib and trimmed to a rib height of  $15/64$  ( $\pm 1/16$ ) inch. The insoles shall be coated with any suitable adhesive prior to application of the duck. As an alternate, a  $3/4$  inch strip of the duck specified in 3.3.25 may be used to reinforce the rib.

3.7.7 Lasting. Prior to lasting the uppers may be conditioned by any suitable method except that they shall not be dipped in water. The correct size and width of uppers assembly, counters and insoles shall be assembled to the last. Insoles shall be tacked to the last with not less than 5 tacks or staples, one in the center of the heel seat, one at the shank, one at each side of the ball area and one at the toe. Tacks shall not be larger than  $2\frac{1}{2}$  ounces. Edges of the insole shall be even on the last bottom at all points. Counters shall be coated on both sides with any suitable adhesive. Counters shall be large enough to fill the counter pocket, being caught by one or two inseaming stitches and provide for a wiped in heel seat of not less than  $1/2$  inch or more than  $9/16$  inches. The heel seat shall be tacked flat and free of wrinkles. As an alternate, heel seat lasting may be done by any suitable method or equipment to insure a flat, secure heel seat. The understructure box toe (3.3.14.1) shall completely cover the steel box toe area. The uppers shall then be pulled down to the last with proper tension to assure that quarters at the blucher points are even. Sides of the shoes shall be spindled and uppers stapled firmly to the last. As an alternate, the side lasting and inseaming operation may be performed simultaneously with any suitable equipment or method. A second toe lasting shall be performed for the insertion of the steel toe and toe cushion. The toe cushion may be cemented to the flesh side of the vamp. The vamp shall be laid back sufficiently for proper positioning of the steel box toe and toe cushion.

The vamp shall then be lasted back in place and secured around the base of the insole rib. As an alternate, a single toe lasting may be performed. The foam understructure shall be cemented to the vamp lining. Any suitable equipment or method may be used to securely attach the uppers in the toe area to the base of the insole rib. Prior to heel seat lasting and inseaming, the shoes shall be spindled, drafting the forward counter edges into position and the uppers snugly to the last. Toe lasting shall provide a shoulder for the inseaming operation. No tacks shall be used above the lasting line or in the back of the quarters.

3.7.7.1 Time allowance on lasts. The boots shall remain on the lasts until all parts are thoroughly dry.

3.7.8 Inseaming and seam sealing. Inseaming shall be performed using thread specified in 3.3.13.3. The thread shall be thoroughly hot waxed and a needle not larger than No. 41 shall be used for stitching. The welting shall be inseam stitched to the bottom of the insole rib from rib end to rib end with not less than 3 1/4 stitches per inch and shall catch the counters with one or two stitches. Prior to inseaming, the lasted-over margin shall be coated with a seam sealer specified in 3.3.11.1.

3.7.9 Tack or staple pulling, inseam trimming. All insole tacks or staples shall be removed and no broken tack or staple points shall remain. The inseam shall be closely trimmed from welt butt to welt butt, without cutting or damaging the stitches. The ends of the welt shall be skived with a 5/8 (+ 1/8) inch bevel and tacked within the butt area. The welt shall be joined by the inseamer with adequate tension and machine adjustment, whereas it will hinge easily after joining.

3.7.10 Second seam sealing. The trimmed inseam, from inseam stitching on welt underside, over top of trimmed inseam and down the inside of the insole rib to its base covering the inseam stitching, channeling, nail, staple or tack holes, tacks and staples, shall be given a heavy coat of seam sealer specified in 3.3.11.1, and allowed to dry at room temperature. The sealer may be applied to the underside of the welting.

3.7.11 Shank fitting, bottom filling. The shank assemblies shall be selected for correct size in accordance with the casing schedule as specified in 3.3.16.3. The shank assemblies shall be inserted in position and the shankboard piece filling the cavity between the inside and outside ribs from the ball line rearward to the back of the heel seat. The forward end of the shankboard shall be flush with the insole, fit the contour of the boot bottom back of the ball line, and be attached to the boot with pitch, wax or two tacks or staples, one on each side of the steel piece at the rear end of the cover. The bottom filler shall be applied and firmly pressed into the insole channel around the toe, extending to the forward end of the shankboard with a uniform and even surface. The bottom shall present a flat, smooth surface for sole laying. Any excess areas between the shank cover and insole rib, and in the heel seat area shall be filled with bottom filler.

3.7.12 Sole laying. The boot bottoms, except heel seat area, shall be thoroughly coated with any suitable adhesive. The outsole shall be properly positioned on the boot bottom and laid on a sole laying machine with pressure. The outsoles shall be of adequate size and laid evenly to allow for the specified edge extension.

3.7.13 Rough rounding. The soles shall be smoothly rounded on a rough rounding machine to provide for the edge extension of sole and welt specified in 3.7.19.

3.7.14 Goodyear stitching. The sole and welt shall be stitched together on a lockstitch machine using thread specified in 3.3.13.2, with a 4 1/2 to 7 stitches per inch, except that there shall be no more than 3 1/2 stitches per any one-half inch length in the ball and toe sole stitching. A needle and awl not larger than No. 45 shall be used. Stitches shall be laid on the surface of the welt and close to the outer edge of the welt on the finished boot. The lock shall be just under the surface of the outsole. The Goodyear stitching shall not fall in the traction tread design area of the outsole.

3.7.15 Heel seat fastening. Heel seat fastening shall be done using nails specified in 3.3.18.4, driven three to the inch and properly positioned at the edge of the insole from welt butt to welt butt to provide a secure, smooth clinch on the insole.

3.7.16 Heel seat rounding. The outsole in the heel seat area shall be smoothly rounded from butt of welt to butt of welt.

3.7.17 Heel attaching. Heels specified in 3.3.8 shall be attached with 13 nails (see 3.3.18.2). The nails shall be of sufficient length to insure a smooth secure clinch on the insole. The heeling machine shall be equipped with proper length drivers to assure that all nails are driven evenly against the plastic or composition cores in the heel and clinch the nails on the insole. Nails shall not be driven in the tread pattern. Proper size heels shall be used for the full range of boot sizes.

3.7.18 Heel finishing. The heels shall be trimmed square and smoothly scoured. The beveled breastline shall not be scoured.

3.7.19 Edge trimming. Sole edges shall be trimmed square, and smoothly joined to the heel. The finished edge extension shall be not less than 3/16 inch at the toe and outside ball, and not less than 2/16 at the inside ball. The trimming shall be adequately paired.

3.7.20 Finishing

3.7.20.1 Preparation. The boots shall be cleaned, removing all excess wax and other foreign matter. The surface of the leather shall be conditioned to receive further application of the finish. All thread ends shall be trimmed.

3.7.20.2 Treeing. All wrinkles shall be removed from the boots while on the last and no material shall be used that may injure the leather or thread.

3.7.20.3 Final finish. Boots shall be repaired and properly filled and given a top finish using material and methods as specified in 3.3.19 to 3.3.24. All raw edges shall be stained to match the color of the upper leather.

3.7.21 Nails, tacks and staples. Nails, tacks and staples that have been left protruding through the insole, and cannot be pulled out, shall be cut close to the surface leaving no protruding stumps. A mechanical tack detector or other suitable method may be used to indicate the presence of any protruding nails, tacks or staples inside the boot.

3.7.22 Heel pads. The flesh side of the heel pads shall be coated with any suitable adhesive and shall be firmly pressed into the heel seat area at all points.

3.7.23 Lacing-mating. The boots shall be properly mated and a lace inserted through the top eyelet of the outside quarter of each boot and both laces tied firmly together.

3.8 Workmanship. The finished boots shall conform to the quality of product established by this specification. The occurrence of defects shall not exceed the applicable acceptable quality levels.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Certificate of compliance. Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 First article inspection. The first article submitted in accordance with 3.2 shall be inspected as specified in 4.3.5 for compliance with design, construction, workmanship and dimensional requirements.

4.3 Inspection. Inspection shall be in accordance with the provisions set forth in MIL-STD-105, except where otherwise indicated herein.

4.3.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected and tested in accordance with all the requirements of referenced specifications, drawings and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document. In addition, testing shall be performed on components and materials listed in Table V. When data in the "Number of determinations per sample unit" and "results reported as" columns are not specified in Table V, they shall be reported as required by the referenced test methods. All test reports shall contain the individual values utilized in expressing the final result. The lot shall be unacceptable if one or more sample units or the composite fail to meet any requirements specified. The sample size shall be as follows:

<u>Lot size</u>	<u>Sample size</u>
800 or less	2
801 up to and including 22,000	3
22,001 and over	5

# TESTING OF COMPONENTS

Component and unit of product	Characteristic	Specification reference		Requirement applicable to		No. of determinations per sample unit	Results reported as	Sample unit
		Requirement paragraph	Test method	Sample unit	Lot average			
Upper leather (1 side or skin)	Chrome tannage	3.3.1	2/					One piece 8" x 8" 1/
	Embossing or printing	3.3.1	2/					
	Water penetration	3.3.1.1.1	ASTM D-2098 or D-2099	X		1	No of cycles	10 specimens "a" area; 5 specimens "x" area 1/
Leather: Tongues eyelet stay top facings Lining leather (1 side or skin)	Water absorption	3.3.1.1.2	4.4.6	X		1	Percent	10 specimens "a" area; 5 specimens "x" area 1/
	Water resistance	3.3.2	4.4.2	X		1	No of taps	One "2 x 8" piece 1/
	Chrome tannage	3.3.3	2/					One piece 8" x 8" 1/
Leather, General	Paranitrophenol Content	3.3.6	FED-STD-311 6711 2/		X			
Synthetic welting (yd)	Material Identification	3.3.9	2/					5 yards

MIL-B-87068

MCBHU Form 9  
19 Apr 71



TESTING OF COMPONENTS									
Component and unit of product	Characteristic	Specification reference		Requirement applicable to		No. of determinations per sample unit	Results reported as	Sample unit	MIL-87068
		Requirement paragraph	Test method	Sample unit	Lot average				
Initial	Hardness	3.3.9	ASTM D-2240 3/	X		3	number		
	Specific gravity	3.3.9	4.4.1.4	X		3	Nearest .01		
	Brittle point (before and after aging)	3.3.9	ASTM D-746 & 4.4.1.6	X		10	nearest 1 1/4 F		
	Tensile strength	3.3.9	D-412 "Die E"	X		5	Nearest 10 psi		
	Elongation	3.3.9	D-412 "Die E"	X		5	Nearest 5%		
	Water absorption	3.3.9	4.4.1.5	X		3	nearest .01%		
	Diameter of bead (when used)	3.3.9	gauge	X		1	nearest .001		
	Tensile strength	3.3.9	ASTM D-412 & 4.4.1.2	X		5	nearest 10 psi		
	Elongation	3.3.9	D412 & 4.4.1.2	X		5	nearest 5%		
	Volume swell	3.3.9	4.4.1.3	X		3	nearest %		
After immersion	Hardness	3.3.9	ASTM D-2240 & 4.4.1.1 3/	X		3	nearest No.		

NC-TRU Form 9  
19 Apr 71



# TESTING OF COMPONENTS

Component and unit of product	Characteristic	Specification reference		Requirement applicable to		No. of determinations per sample unit	Results reported as	Sample unit
		Requirement paragraph	Test method	Sample unit	Lot average			
Seam seal adhesive vinyl (1 gallon)	Composition	3.3.11.1.1.1	3/ ASTM			1	nearest	1 pint
	Gallon weight	3.3.11.1.1.1	Method D-816 2/ 4.45 2/	X		2	.10 oz. nearest	
	Total solids	3.3.11.1.1.1		X		2	0.1% nearest	
	Viscosity	3.3.11.1.1.1	D-1084 (Method A) 2/u/	X		2 1 second	nearest	
Understructure box toe napped cloth 1 yard	Material Identification	3.3.14.1	2/ FED-STD-191					1 square foot
	Thickness	3.3.14.1	5030					
	Weight	3.3.14.1	5041					
	Thickness	3.3.14.1	FED-STD-601 12031					
Foam material (1 yard)	Material Identification	3.3.14.2	2/ FED-STD-601					1 square foot
	Thickness	3.3.14.2 (a and b)	12031					

MIL-B-87068

ECTDU Form 9  
19 Apr 71

TESTING OF COMPONENTS									
Component and unit of product	Characteristic	Specification Requirement paragraph	Specification reference		Requirement applicable to		No. of determinations per sample unit	Results reported as	Sample unit
			Test method		Sample unit	Lot average			
Toe cushion (poly-vinyl and latex when applicable) 1 yard (cont'd)	Weight, cubic foot	3.3.14.2 (a)	FED-STD-191						
			5041						
Steel box toe - 1 pair	Material								
	Identification	3.3.14.3	2/						
	Hardness (rockwell C scale)	3.3.14.3	FED-STD-151		X		3	number	2 box toes
	Carbon content	3.3.14.3	243						
	Coating identification	3.3.14.3	2/						
	Plating	3.3.14.3	2/						
Bottom filler (1 lb)	Thickness	3.3.14.3	2/						
	Percentage of cork to binder	3.3.15	2/						1 pound composite
	Softening point of binder	3.3.15	ASTM E-28			X	2	nearest degree	
	Penetration of binder	3.3.15	D-5			X	2	number	
	Solubility of binder in water	3.3.15	2/						
	Flexibility of binder	3.3.15	2/						

NCIH Form 9  
19 Apr 71

# TESTING OF COMPONENTS

Component and unit of product	Characteristic	Specification reference		Requirement applicable to		No. of determinations per sample unit	Results reported as	Sample unit
		Requirement paragraph	Test method	Sample unit	Lot average			
Shank board (1 pair)	Material identification Thickness	3.3.16.1	2/ gauge		X	3	nearest 1/128 inch	1 pair
		3.3.16.1						
Steel shank (1 shank)	Material Identification Coating Identification Hardness (Rockwell C scale)	3.3.16.2	2/ FED-STD-151 243			3		2 shanks
		3.3.16.2						
		3.3.16.2						
		3.3.16.2						
Eyclets (1 pound)	Thickness and width Material Identification Thickness Finish Diameter: Flange barrel Hole Overall Length	3.3.16.2	gauge 2/		X	1	nearest number nearest .001 in.	
		3.3.18.1	2/					
		3.3.18.1	2/					
		3.3.18.1.1	2/					
		3.3.18.1	2/					
Heel nails (1 pound)	Material Identification Gauge		ASTM					
		3.3.18.2	B-36 & B-134 4.4.4	X X		1 1	Pass or fail Pass or fail	1/4 pound
		3.3.18.2						
Tacks and staples (1 pound)	Material Identification		ASTM					
		3.3.18.3	B-36	X		1	Pass or fail	1/4 pound

MIL-B-87068

ACTHJ Form 9  
19 Apr 71

TESTING OF COMPONENTS									
Component and unit of product	Characteristic	Specification reference		Requirement applicable to sample unit		No. of determinations per sample unit	Results reported as	Sample unit	MIL-B-87068
		Requirement paragraph	Test method	Sample unit	Lot average				
Nails (heel seat) 1 pound Stuck-on rib	Material								
	Identification	3.3.18.4	2/						
	Gauge	3.3.18.4	2/						
	Material								
	Identification	3.3.25	2/						
	Weight	3.3.25	2/						
	Yarns per inch	3.3.25	2/						
	Breaking strength	3.3.25	2/						
1/ Sampling procedures and location from which the sample unit is to be obtained shall be in accordance with Section 4 of FED-STD-311. 2/ A certificate of compliance is acceptable for this characteristic. 3/ Fifteen second reading on flat portion. 4/ Parlin Fourth Cup with a 0.25 inch diameter orifice shall be used.									

NCITD Form 9  
19 Apr 71

#### 4.3.2 Examination of components

4.3.2.1 Examination of insoles The insoles shall be examined for visual and dimensional characteristics in accordance with KK-I-570.

4.3.2.2 Examination of vamps prior to fitting A 100% examination of each cut vamp for the defects listed in 3.3.1 shall be conducted prior to fitting operations. Any cut vamp containing one or more defects shall result in the rejection of that vamp.

4.3.3 In-process inspection Inspection shall be made at any point or during any phase of the manufacturing process to determine whether operations or assemblies are carried out as specified. The Government reserves the right to exclude from consideration for acceptance any material or service for which in-process inspection has indicated non-conformance.

#### 4.3.4 Intermediate inspection

4.3.4.1 Visual examination The defects found during intermediate examinations shall be classified in accordance with 4.3.4.1.1 and 4.3.4.1.2. The applicable inspection levels and acceptable quality levels shall be as indicated in 4.3.4.1.3.

NOTE: Defects designated by an asterisk (\*) shall be scored as "Major" when seriously affecting serviceability and "Minor" when affecting serviceability but not seriously.

4.3.4.1.1 Examination of uppers after all fitting The upper assembly shall be examined for defects in cutting, fitting and other construction characteristics which cannot be seen in the end item. The sample unit shall be one completely fabricated upper assembly prepared for lasting. The lot size shall be expressed in terms of the sample unit.

Examine	Defect	Classification	
		Major (*)	Minor
Construction and workmanship (general)	Construction not as specified	X	
	Any component missing or other than type specified	X	
	Any component misplaced or not affixed as specified		*
	Any component not skived as specified	X	
	Backseam not rubbed down		X
	Backseam tape not caught in both rows of stitching		X

Examine	Defect	Classification	
		Major (*)	Minor
Quality of leather (Upper leather and lining leather)	Not full grain	X	
	Not specified color - uppers	X	
	Not specified color - lining		X
	Coarse, rough fiber on the flesh side		*
	Slaughter cut or otherwise damaged	X	
	Weight more than 1/2 ounce less than the minimum specified	X	
	Weight more than the maximum or up to 1/2 ounce less than the minimum specified		X
	Loose, flanky		X

4.3.4.1.2 Examination of boot before bottom filling The partially fabricated boot shall be examined for defects in construction and workmanship that cannot be seen in the end item. The sample unit shall be one partially constructed boot at a point after lasting and attachment of the shank but before the application of the bottom filler. The lot size shall be expressed in terms of the sample unit.

Examine	Defect	Classification	
		Major (*)	Minor
Bottom of boot	Any component missing or other than specified type	X	
	Shank not properly positioned, e.g., end of steel shank extending beyond ball line	X	
	Shank wrong size or malformed		X
	Shank not fitting contour of boot bottom		*
	Shank not securely attached		X
	Any tear in duck over 1/2 inch in stitch area	X	
	Any insole staple or anchor tack not removed	X	
	Upper damaged in lasting		*
	Excess leather in heel seat in- terfering with proper fit of shank		X
	Poor heel seat lasting, e.g., heel seat not flat, upper not completely caught in by lasting tacks		X

Examine	Defect	Classification	
		Major (*)	Minor
Bottom of boot (cont'd)	Poor side lasting, upper loose on last, i.e., insufficient lasting staples to hold upper to last		X
	Inseam not properly trimmed	*	
	Inseam seal operation before and after welting omitted or not properly performed	X	
	Less than three stitches per inch	X	
	Less than 3 1/4 stitches but not less than three stitches per inch on inseam		X
	Any inseam stitch broken, skipped, cut or damaged	X	
	Two or more inseam stitches not at bottom of insole rib or not in welt groove		*
	Broken insole rib	X	
	Any operation omitted	X	
	Any operation improperly performed	*	
	Welt butt not properly skived and tacked		X
	Ends of counter not caught by in-seam stitching		X
Upper part of boot	Uppers not firmly down to last		X
	Lace opening more or less than specified		X
Steel toe assembly	Quarters not laced as specified		X
	Steel toe out of alignment, or crooked	*	

4.3.4.1.3 Acceptable quality levels (AQL's) and inspection levels The acceptable quality levels, expressed in defects per 100 units and the inspection levels shall be as follows:

	Inspection level	AQL's	
		Major	Total
For defects applicable to 4.3.4.1.1	I	2.5	6.5
For defects applicable to 4.3.4.1.2	I	2.5	6.5

4.3.4.2 Testing of combined rib and insole When used, the stuck-on rib shall be tested for compliance with the requirements of 3.3.25.1 Method 2061 of FED-STD-311 shall be used for the shear strength test. Method 2171 of FED-STD-311 shall be used for the stitch tear strength. The sample unit shall be two ribbed insoles, one for each test, and the sample size shall be 5, regardless of the lot quantity. Requirements are applicable to the sample unit. The lot shall be unacceptable if one or more sample units or the lot average fail to meet the specified requirement. All test reports shall contain the individual values utilized in expressing the final result.

4.3.5 Examination of the end item The defects found during the examination of the end item shall be classified in accordance with 4.3.5.1 and 3.3.1. The applicable inspection level and acceptable quality levels (AQL's) shall be as indicated in 4.3.5.1.1.

4.3.5.1 Visual examination The boots shall be examined for defects listed below. The sample unit shall be one completely fabricated boot and the selection shall be by pairs. Heel pads removed during Government verification inspection shall be properly replaced by the supplier. For pairing examination, the pair shall be examined together. Each defect found during the examination for pairing shall be scored as a single defect. The lot size shall be expressed in terms of the sampling unit. The vamp (except the top tongue area) and inside and outside quarter shall be examined for break of leather in accordance with the procedure below:

Vamp To examine the vamp, the boot shall be held in an upright position with both hands. The toe of the boot shall face away from the examiner. Position thumbs on top of vamp approximately half way between box toe liner and blucher noses and 1 inch to 1 1/2 inches apart. Press downward with thumbs so as to form the grain surface into a concave surface and observe the grain break. Any vamp exhibiting a break pattern at any location comparable to a break pattern greater than 5 on the Satra scale (see 6.4) shall be scored regardless of the direction in which the break pattern appears.

Quarters Bend each quarter in a concave position in any direction. The break in leather shall be compared with break pattern of the Satra scale (see 6.4). Any quarter exhibiting a break pattern greater than No. 5 on the Satra scale shall be scored as a defect.

NOTE: Asterisk defects listed below shall be scored "Major" when affecting serviceability or appearance seriously and "Minor" when affecting serviceability or appearance but not seriously.



Examine	Defect	Classification	
		Major (*)	Minor
Pairing	Not properly mated, i.e., not right and left of same size	X	*
	Variation in color or appearance		
Cleanliness	Any spot, stain or foreign matter clearly noticeable		X
Color and finish	Not specified color	X	
	Color not uniform		X
	Any raw edges not stained to match upper leather		X
	Finish streaky, runs, chipped or flaky on uppers <u>3/</u>		X
Design, type and size	Not as specified	X	
Material (general)	Any component not fabricated of the material specified	X	
Upper leather	Leather damaged in process		*
	Break of vamps and quarters not as specified (see 4.3.5.1)	X	
Lining	Wrinkled or excessive fullness of lining	X	
Construction and workmanship (general)	Any cut, tear, hole, repair, abrasion		*
	Any component or assembly misplaced, operation omitted or not properly performed, e.g., backstay or blucher noses crooked to a degree where it is readily noticeable		*
	Wrinkled or bunched area at the back seam		*
	Any component or assembly misplaced or operation omitted or not properly performed, e.g., eyelet not properly clinched but is not expected to become detached from assembly		X

Examine	Defect	Classification	
		Major (*)	Minor
Seams and stitching (upper)	Any open seam (A seam shall be classified as open when one or more stitches joining a seam are broken, or when two or more continuous stitches or runoffs occur. On multiple stitched seams, a seam is considered open when one or more rows of stitching are open).	*	
	Loose tension resulting in a loosely secured seam	*	
	Tight tension resulting in puckering or cutting of leather	*	
	Wrong stitch type or seam type	X	
	Less than the minimum specified		X
	More than the specified maximum number of stitches:	*	
	Gauge of stitching not as specified or irregular		X
	Any row of stitching omitted	*	
	Thread ends not trimmed throughout boot		X
	Needle holes or needle chews		X
Outsole stitching and bottom attaching (Goodyear)	Lock not just under surface of outsole	*	
	Lock on surface of outsole	*	
	Less than 3 1/2 stitches per inch	X	
	Less than 4 1/2 but not less than 3 1/2 stitches per inch		X
	More than 7 stitches per inch except ball and toe sole stitching		X

Examine	Defect	Classification	
		Major	(*) Minor
Outsole stitching and bottom attaching (Goodyear)	NOTE: More than 3 1/2 stitches per any one half inch length in the ball and toe sole stitching shall be classified as a minor defect. The ball and toe sole stitching shall be defined as that portion of the sole stitching that runs from the inside ball and around the toe to the outside ball.		
	Stitches short at heel breast		*
	Skipped or broken stitch		*
	Goodyear stitching cutting into sole substance or deeper than specified	X	
	Gauge of Goodyear stitching not as specified or irregular		X
	Checked sole		X
	Any stitching not visible on surface of sole	X	
	Goodyear stitching running into tread area		*
	Counters		*
	Edge making		
	Rolled or curled counter		*
	Edge trimmed into Goodyear stitching	X	
	Edge not trimmed square or trimming is irregular		X
	Sole extension less than the specified minimum by more than 3/32 inch	X	
Heel finishing and attaching	Sole extension less than the specified minimum but not more than 3/32 inch		X
	Heel not finished square, i.e., flared or tapered more than 1/8 inch		X
	Heel not finished smooth		X
	Checked heel, i.e., separation of heel and outsole		X
	Wrong size or type heel		X
	Breast of heels not beveled		X
	Any heel nail missing		X
	Open heel seat	*	
	Heel crooked		X

Examine	Defect	Classification	
		Major (*)	Minor
Heel finishing and attaching (cont'd)	Either corner breast nail not clinched on insole		X
	Two or three nails other than corner breast nail not clinched on insole		X
	More than three nails other than corner breast nail not clinched on insole	X	
	NOTE: Evidence of heel nails on insole shall not be inter- preted as proper or sufficient clinching.		
Eyelets	Number of eyelets not as specified	X	
	Eyelets not properly spaced within the row or misalignment between the rows to an extent interfering with proper lacing		*
Inseaming	Eyelet not securely clinched		X
	Grinning seam, i.e., thread exposed	X	
	Strained seam, i.e., needle holes visible but thread not exposed		X
Insoles	Short or long		*
	Shank attaching tack or staple not clinched when used		*
	Any protruding point of tack, staple or nail on insole in heel area	X	
	Any protruding point of nail, staple or tack on insole forward of the heel breast line <u>1/</u>		
Steel box toe	Missing <u>2/</u>		
Marking	Missing, incomplete, incorrect, not applied in the specified manner, misplaced, illegible or not specified size		X

1/ Any protruding point of tack staple or nail found in the sample shall cause rejection of the lot represented.

2/ Any missing steel box toe found in the sample shall cause rejection of lot presented.

3/ Finish shall be examined for flakiness, cracking, etc., during examination for break in leather.

4.3.5.1.1 Acceptable quality levels (AQL's) and inspection level The acceptable quality levels, expressed in defects per 100 units, and the inspection levels shall be as follows:

	<u>Inspection level</u>	<u>AQL's</u>	
		<u>Major</u>	<u>Total</u>
For defects applicable to 4.3.5.1	II	2.5	6.5

4.3.5.2 Testing of the end item The finished boots shall be tested for the performance characteristics listed in Table VI. The sample unit for the impact test shall be one boot and selection shall be by pairs. The lot size shall be expressed in terms of the sample unit. All test reports shall contain the individual values utilized in expressing the final result. Requirements are applicable to the sample unit. The inspection level for the impact test shall be S-2. Any sample unit that fails to meet the requirement specified shall result in rejection of the lot.

Table VI - End item testing

<u>Sample unit</u>	<u>Characteristic</u>	<u>Specifi- cation refer- ence Require- ment para- graph</u>	<u>Test method</u>	<u>Require- ment applic- able to Indiv. unit of product</u>	<u>No. deter- mina- tions per indivi- dual unit of product</u>	<u>Results reported as</u>
One boot	Impact	3.3.14.3.1	4.4.3 or ANSI Z41.1- 1967 (R1972)	X	1	Pass or fail

4.3.6 Examination of packaging requirements An examination shall be made to determine that packaging, packing and marking complies with Section 5 requirements of this specification. Defects shall be scored in accordance with the list below. The sample unit shall be one shipping container fully prepared for delivery with the exception that it need not be sealed. Defects of closure listed below shall be examined on shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL shall be 2.5 defects per one hundred units.

<u>Examine</u>	<u>Defects</u>
Marking (exterior)	Omitted, incorrect, illegible, of improper size, location, sequence, or method of application. Size on item marking not in conformance with size shown on exterior container. <u>1/</u>
Materials	Any component missing, any component damaged. Any component not as specified.
Workmanship	Inadequate application of components such as: Incomplete closure of container flaps, loose strapping, inadequate stapling. Bulging or distortion of containers.
Content	Number of pairs of boots per container is more or less than specified

---

1/ For this defect, one pair from each container shall be examined.

#### 4.4 Tests

4.4.1 Test for synthetic welting The testing of the synthetic welting shall be carried out as specified in ASTM standards, using methods listed in Table V and as follows:

4.4.1.1 Hardness resistance A specimen of synthetic welting, a minimum length of 3 inches of the full width and thickness of the welting, shall be immersed at a temperature of  $23 (+ 2)$  degrees Celsius ( $73.4 + 3.6$  degrees Fahrenheit) for  $24 (+ 1/4)$  hours in type III fluid of TT-S-735. The specimen shall be completely immersed in the fluid and the container shall be fitted with an air or reflux condenser so as to maintain a constant volume. At the end of the immersion period, the specimen shall be removed from the fluid, blotted dry with filter paper or other absorbent material, and tested immediately for hardness as specified in Table V.

4.4.1.2 Elongation and tensile strength A specimen of the synthetic welting, 6 by 0.45 by 0.125 ( $+ 3$  percent) inches shall be completely immersed at a temperature of  $23 (+ 2)$  degrees Centigrade ( $73.4 + 3.6$  degrees Fahrenheit) for  $24 (+ 1/4)$  hours in type III fluid of TT-S-735. The container shall be fitted with an air or reflux condenser so as to maintain a constant volume. At the end of the immersion period, the specimen shall be removed from the fluid, blotted dry with filter paper or other absorbent material and hung up in a temperature of  $23 (+ 2)$  degrees Centigrade ( $73.4 + 3.6$  degrees Fahrenheit) for  $24 (+ 1/4)$  hours and then tested for elongation and tensile strength as specified in Table V.

4.4.1.3 Volume swell A 50 ml. burette calibrated 0.1 ml. shall be filled with 30 ml. (V1) of methanol. The test specimen shall be 1/4 (+ 1/16) inch in length which shall be immersed in the methanol, and the increase volume shall be recorded as V2. The specimen shall then be removed, dried and immersed in fluid III of TT-S-735 for a period of 24 (+ 1/4) hours. The treated sample shall then be removed, dried and inserted in the burette filled with 30 ml. (V1b) of methanol, and the increased volume shall be recorded as V2b. The percent of volume swell shall be calculated from the following formula:

$$\begin{aligned} \text{Volume swell percent} &= \frac{V2-V1}{V1} \times 100 \\ &= \frac{V2b-V1b}{V1} \times 100 \end{aligned}$$

4.4.1.4 Specific gravity The specific gravity of the synthetic welting shall be determined by a Fisher Young Gravitometer using a specimen from 2 to 3 inches in length.

4.4.1.5 Water absorption A specimen of synthetic welting shall be cut to a length of 4 (+ 0.05) inches, weighed to the nearest 0.001 gram (W1), immersed in a beaker of distilled water and maintained for seven days in an oven, at a temperature of 70°C (+ 2°C). The beaker shall then be removed from the oven, cooled to a room temperature. The test specimen shall then be washed in methanol, dried for one minute and reweighed (W2). The top of the beaker shall be sealed during the test to prevent evaporation of the distilled water. The percentage of water absorbed shall be calculated from the following formula:

$$\text{Water absorption percent} = \frac{W2-W1}{W1} \times 100$$

4.4.1.6 Brittle point after ageing A sample of synthetic welting shall be placed in an oven and maintained at a temperature of 100°C (+ 2°C) for seven days. The sample shall then be removed and allowed to remain at room temperature for 24 hours prior to testing as specified in Table V.

4.4.2 Test for water resistance of Tongue, eyelet stay and top facing leather The test specimen shall be a rectangle piece of leather, one inch wide and of a suitable length. Prior to testing, the grain surface of the test specimen shall be buffed ten times, lightly by hand using a No. 180 silicone carbide paper, in random direction under a 1/2 pound load. The specimen shall be fastened taut, under the hammer of a Universal Leather Tester or equivalent type of tester. The hammer and specimen shall fall together 1/2 inch on the rotating wet anvil. The end point shall be determined electronically, by mechanical counter or by means of a bell signal.

4.4.3 Test of steel box toe. The impact test shall be performed on a finished toe section of the boot.

4.4.3.1 Impact The impact test shall be performed in accordance with the following procedure: A falling weight of steel or other suitable material, weighing not less than 49 1/2 pounds nor more than 50 1/2 pounds 1 inch ( $\pm 0.020$  inch) in diameter and with a striking face made hemispherical in shape by rounding on a 1 inch radius, equipped to drop freely in a tube or other suitable guide, shall be used. The weight shall be dropped from a distance of 18 inches, ( $\pm 1/4$ ) above the top of the toebox. As an alternate, a falling weight of 25 ( $\pm 1/4$ ) pounds shall be dropped from a distance of 36 ( $\pm 1/2$  inch). The equipment shall be assembled so that the center of the striking face of the falling weight will strike the boot at midwidth 1/2 inch in front of the back edge of the toe-box. The boot (or toe section) shall be mounted on an anvil ((or rigidly mounted bed-plate) of steel or other suitable material weighing not less than 500 pounds, equipped with suitable guides (or clamps) to hold the boot specimen in place. In performing the test, the instantaneous clearance shall be determined by placing a lump of plastic material such as wax or modeling clay inside the boot directly below the point of impact. The plastic material should be compressed with the fingers so that it contacts both upper and lower inside surfaces of the boot before the test is made. When in place, the greatest horizontal dimension of the lumps should not exceed 1 inch. The plastic material shall be removed after impact and measured for compliance with 3.3.14.3.1. Other suitable methods for determining the instantaneous clearance may be used.

4.4.4 Gauging of nail points. The gauging of nail points shall be done with an English standard wire gauge in which 20 gauge is 0.035 ( $\pm 0.005$ ) inch. The points of the nails shall enter the gauge at least 1/32 inch.

4.4.5 Total solids of seam sealant

4.4.5.1 Apparatus

- a. Flat bottom dishes, 70mm in diameter made of aluminum, such as milk analysis or equal
- b. Analytical balance
- c. Laboratory oven, forced draft



4.4.5.2 Procedure. Place a portion of the thoroughly mixed sample in a dropping bottle and weigh to the nearest .001 mg. Weigh aluminum dishes with fourth-decimal accuracy. Transfer a sample weight of two grams to a dish, determine the exact weight by loss in weight of the bottle. Place dish in the oven at 150½C for two hours. Upon cooling in a desiccator, reweigh the dish to the nearest .004mg. From the weight of the residue in the dish and the weight of the sample taken, calculate the percent of total solids.

4.4.6 Test of water absorption of upper leather. The specimens shall be cut according to ASTM D-2098 or D-2099, conditioned as specified in Section 5 of FED-STD-311 and each weighed separately. The weight of each specimen shall be recorded as  $W_1$  - One to three specimens shall be completely immersed in 1000 ml beaker of distilled water 23½ (+ 1½C) in such a manner that the surfaces of the specimens do not touch each other. After one hour (+ 1) minute immersion, the specimens shall be withdrawn from the beaker and the surface water of each removed by lightly blotting the specimen with blotting paper prior to weighing. The specimen shall then be weighed immediately and the weight recorded as  $W_2$ . The amount of water absorbed by each specimen shall be calculated as follows:

$$\text{Water absorbed, percent} = \frac{W_2 - W_1}{W_1} \times 100$$

Where:  $W_1$  = weight of the original specimen, grams and  $W_2$  = weight of specimen after immersion in water, grams.

## 5. PACKAGING

5.1 Preservation-packaging. Preservation-packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A. Each pair of properly mated boots shall be tied together by the ends of laces which shall be inserted through the top eyelet of the outside quarter of each boot.

5.1.2 Level C. Boots shall be preserved-packaged to afford adequate protection against deterioration and physical damage during shipment from the contractor to the first receiving activity. The package and the quantity per package shall be the same as that normally used by the contractor for retail distribution.

5.2 Packing. Packing shall be level A, B or C as specified (see 6.2).

5.2.1 Level A packing. Twelve pairs of boots of one size and width only, preserved-packaged as specified in 5.1, shall be arranged as shown in table VII (B) and packed in a fiberboard shipping container conforming to style FOL-L grade V2s of PPP-B-636. The inside of each fiberboard container shall be fitted with a box liner conforming to type CF, class weather-resistant, variety DW, grade V15c of PPP-B-636. The approximate inside dimensions of the shipping container shall be as specified in table VI (A). Each container shall have the contents completely covered on the top and bottom with a sheet of commercial grade kraft paper. Each container shall be closed in accordance with method III, waterproofed in accordance with method V, and reinforced as specified in the appendix of PPP-B-636. Toward the end of the contract or when there are less than the required amount per container of the same size and width, mixed sizes and widths may be packed in the same container.

5.2.2 Level B packing. Twelve pairs of boots of one size and width only, preserved-packaged as specified in 5.1, shall be arranged as shown in table VII (B) and packed in a fiberboard shipping container conforming to style FOL-L, type CF, class domestic, variety SW, grade 275 of PPP-B-636. The manufacturer's joint shall be metal stitched. The inside of each fiberboard container shall be fitted with a box liner conforming to type CF, class domestic, variety DW, grade 275 of PPP-B-636. The approximate inside dimensions of the shipping container shall be as specified in table VII (A). Each container shall have the contents completely covered on the top and bottom with a sheet of commercial grade kraft paper. Each container shall be closed in accordance with method II as specified in the appendix of PPP-B-636. Toward the end of the contract or when there are less than the required amount per container of the same size and width, mixed sizes and widths may be packed in the same container.

5.2.2.1 Weather resistant fiberboard containers. When specified (see 6.2), the shipping container shall be a grade V3c, W5c, or W6c fiberboard box fabricated in accordance with PPP-B-636 and closed in accordance with method III as specified in PPP-B-636.

TABLE VII Shipping container dimensions and packaging arrangement

(A) Approximate inside dimensions of shipping containers 1/

Range of boot sizes	Length inches	Width inches	Depth inches
5XN through 8-1/2XW	30-1/2	12-1/2	13
9XN through 12XW	30-1/2	13-1/4	13-3/4

- 1/ Approximate dimensions are furnished as a guide only. For boot sizes below 5XN and above 12XW, the contractor shall determine the size container to use. The dimensions of the container shall be such that it will result in a snug fit of the contents to be packed therein. The use of blocking materials to accommodate small size boots in an oversize container will not be permitted.

(B) Packing arrangement/ Arrangement of boots within the shipping container shall be in four layers of three pairs per layer on their sides with the first layer started by placing the left boot in the left-hand end of the container with the heel toward the front and the sole facing left, and the right boot laid over the quarter of the left boot in the same manner. Two more pairs shall be placed in a like manner to complete the first layer. Care shall be taken that the first layer is properly spaced in order to facilitate the packing of the other three layers. The second layer shall start at the left by placing the right boot with the heel toward the rear, the top facing left, and the sole face to face with the heel of the second boot in the first layer, and so on to complete the layer. The third layer shall be placed exactly as the first, and the fourth layer shall be the same as the second. The last boot placed in the first and third layers, and the first boot placed in the second layer shall have the tops turned upward. The first boot placed in the top layer shall have the top folded under. (See figure 3).

5.2.3 Level C packing. The boots, preserved-packaged as specified in 5.1 shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. The quantity per shipping container shall be the same as that normally used by the contractor for retail distribution. Containers shall comply with Uniform Freight Classification, National Motor Freight Classification, or US Postal Service Manual, as applicable.

5.3 Marking. In addition to any special marking required by the contract, shipping containers shall be marked in accordance with MIL-STD-129.

5.3.1 Width marking. Following the item description and size designation, in the same size lettering, the width shall be spelled out; i.e., EXTRA NARROW, NARROW, REGULAR, WIDE, OR EXTRA WIDE.

5.3.2 Labels, mixed sizes. Each shipping container packed with mixed sizes and widths shall have securely attached to the side and end directly under the printing or stenciling, a white paper label 5 by 4 inches with the words MIXED SIZES AND WIDTHS clearly stamped or printed thereon and under these words shall be legibly stamped or printed the correct quantity of pairs, sizes, and widths contained therein.

6. NOTES

6.1 Intended use. The boots covered by this specification are intended for use by personnel of the Department of Defense.

6.2 Ordering data. Procurement documents should specify the following:

- a. Title, number and date of this specification.
- b. Sizes and widths required (see 1.2).
- c. Whether first article sample is required (see 3.2).
- d. Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
- e. When weather-resistant grade fiberboard shipping containers are required for Level B packing (see 5.2.2.1).

6.3 Samples. For access to samples, address the procuring activity issuing the invitation for bids.

6.4 Satra scale. The Satra scale may be obtained from the British Shoe and Allied Trade Research Association, Satra House, Kettering, Northants, England, or may be obtained from Satra House's North American agent: Bata Engineering, Batawa, Ontario, Canada.

Custodian:

Navy - NU  
Air Force - 11

Preparing activity:

Navy - NU

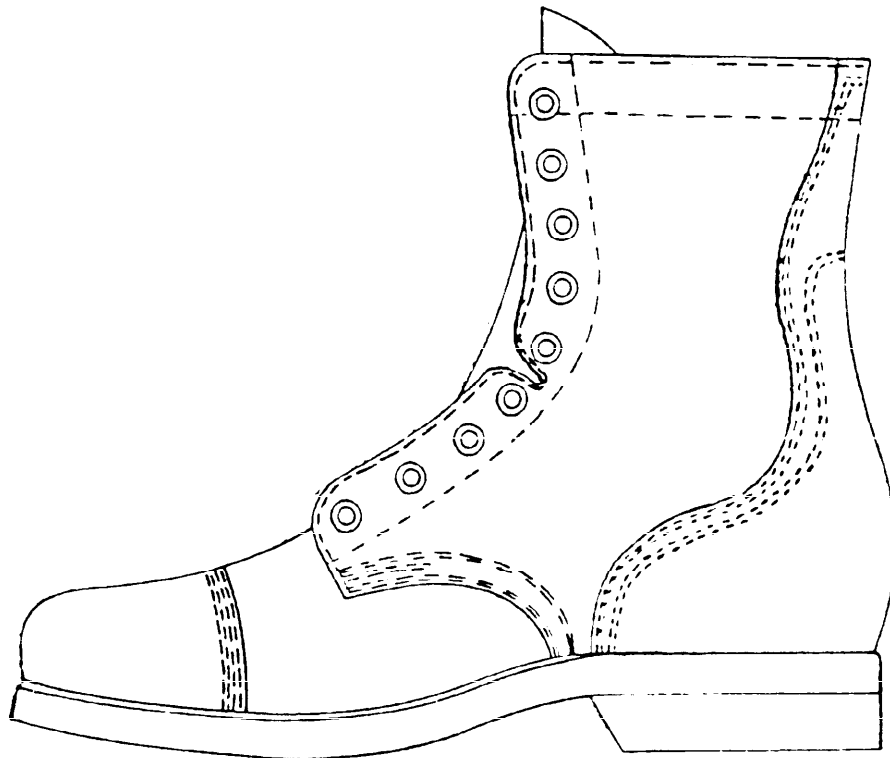
Project No. 8430-0288

Review activities:

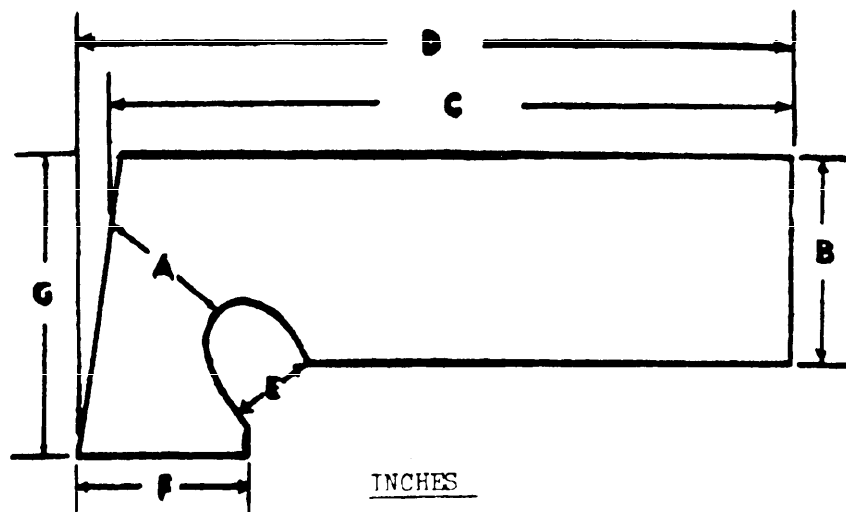
Navy - AS  
Air Force - 45, 99  
DLA - CT

User activities:

Navy - YD, CG, MC, OS, MS



*FIG. 1 - BOOTS , SAFETY (NONSPARKING)*



INCHES

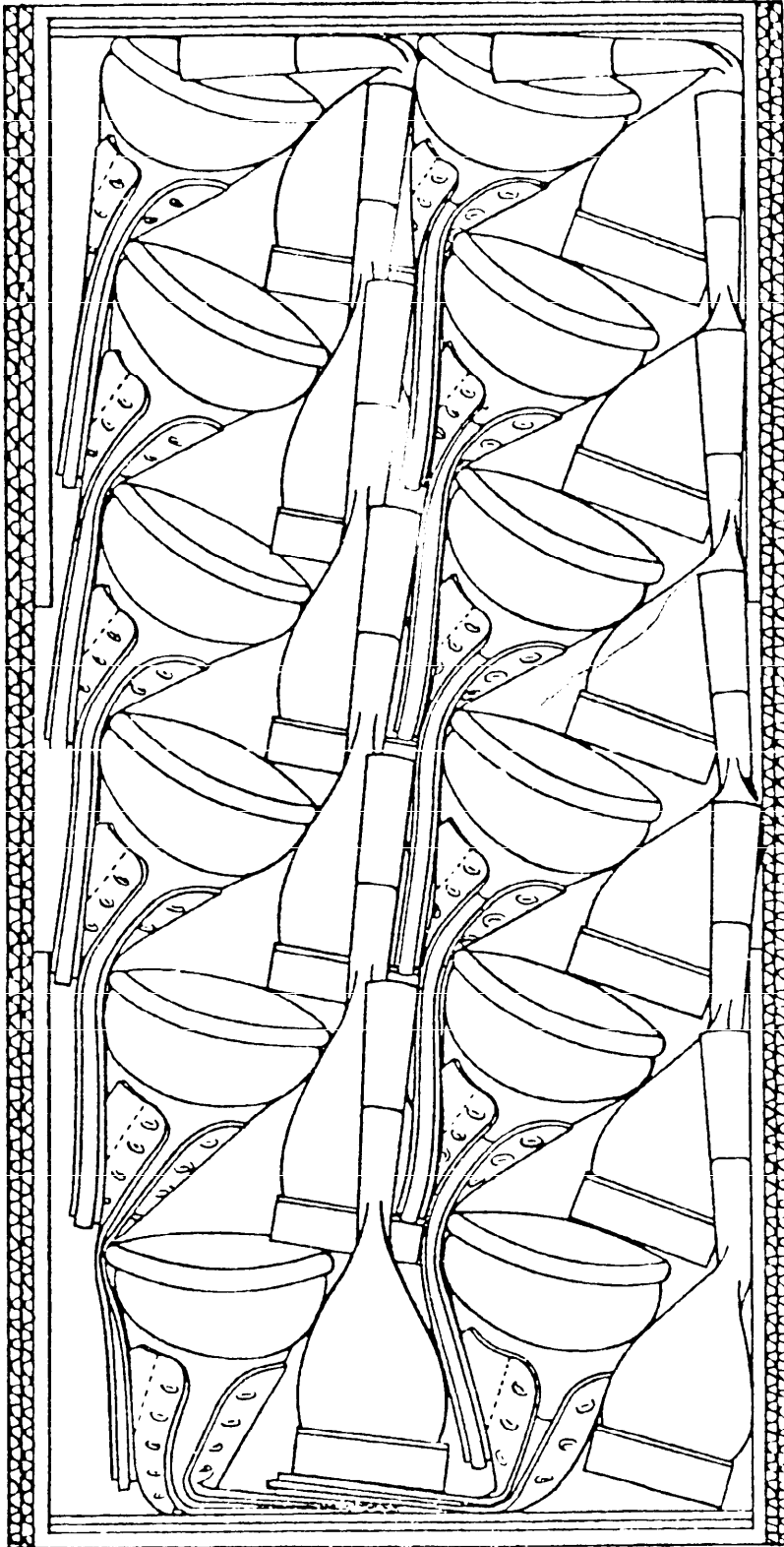
A-.078  
 B-.125  
 C-.437  
 D-.456  
 E-.060  
 F-.109  
 G-.188

Tolerance

+ 1/128  
 - (.0078)

NOTE: Option permits a storm welt with  
 a 0.11 to 0.13 inch diameter bead.

FIGURE 2 - SYNTHETIC WELTING



*FIG. 3 BOOT ARRANGEMENT WITHIN  
SHIPPING CONTAINER  
(SIDE REMOVED)*

FOLD

---

Officer in Charge  
Navy Clothing and Textile Research Facility  
21 Strathmore Road, Natick, Mass. 01760

**OFFICIAL BUSINESS**  
PENALTY FOR PRIVATE USE \$300

POSTAGE AND FEES PAID  
DEPARTMENT OF THE NAVY  
DoD-316



Officer in Charge  
Navy Clothing and Textile Research Facility  
21 Strathmore Road, Natick, Mass. 01760

---

FOLD



# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

**INSTRUCTIONS:** This form is provided to solicit beneficial comments which may improve this document and enhance its use. DoD contractors, government activities, manufacturers, vendors, or other prospective users of the document are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity. A response will be provided to the submitter, when name and address is provided, within 30 days indicating that the 1426 was received and when any appropriate action on it will be completed.

**NOTE:** This form shall not be used to submit requests for waivers, deviations or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

DOCUMENT IDENTIFIER (Number) AND TITLE

MIL-B-87068 Boots, Safety (Nonsparking)

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

☐ VENDOR ☐ USER ☐ MANUFACTURER

1 ☐ HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? ☐ IS ANY PART OF IT TOO RIGID, RESTRICTIVE, LOOSE OR AMBIGUOUS? PLEASE EXPLAIN BELOW.

A. GIVE PARAGRAPH NUMBER AND WORDING

B. RECOMMENDED WORDING CHANGE

C. REASON FOR RECOMMENDED CHANGE(S)

2. REMARKS

SUBMITTED BY (Printed or typed name and address - Optional)

TELEPHONE NO.

DATE

**DD FORM 1426**  
1 OCT 76

Replaces edition of 1 Jan 72 which may be used.

S/N 0102-LF-001-4260